

App. No. 09/872,457  
Amdt. Dated September 6, 2005  
Reply to Office Action of June 3, 2005  
Atty. Dkt. No. 2174-101 (formerly 041581-2002)

### REMARKS/ARGUMENTS

This reply is responsive to an office action mailed on June 3, 2005. Reconsideration and allowance of the application and presently pending claims 1-13 are respectfully requested.

#### Present Status of the Patent Application

Claims 1-13 remain pending in the present application. Claims 2, 3, 5, and 6 have been amended. The amendments to the claims were made to render them more clear and definite and to emphasize the patentable novelty thereof. There is no intent to surrender equivalence.

#### Response to the Drawings Objection

Formal drawings have been submitted on September 10, 2001. Applicants would like to bring to the Examiner's attention that Figures 1 and 2 include the legend "Prior Art" as shown in the attached copies of Figures 1 and 2 with the legend "Prior Art" highlighted. Therefore the objection to the drawings should be withdrawn.

#### Response to the Specification Objection

The disclosure has been objected to because of the informality that a summary of the invention has not been provided. Applicants respectfully traverse this objection. The Examiner accurately stated the following regarding 37 CFR 1.77(b):

6. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

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Applicants believe the present application includes all items required of a patent application and that the "preferred layout" is merely a suggested guideline. Therefore the objection to the specification should be withdrawn.

#### Response to Claim Objections

Claims 2 and 5 are objected to because of the informalities regarding the citations "wherein said generating comprises using Zhang's methodology" and "wherein said means generating employs using Zhang's methodology." Applicants have amended claims 2 and 5 as recommended by the Examiner. Therefore, the objection of claims 2 and 5 should be withdrawn.

#### Response to Claim Rejections Under 35 U.S.C. §112

Claims 3 and 6 have been rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the written description requirement. The claims allegedly contain subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants have appropriately amended claims 3 and 6 to overcome this rejection.

#### Response to Claim Rejections Under 35 U.S.C. §103(a)

Claims 1-13 have been rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Lazarus et al. (U.S. Patent No. 6,430,539 in view of Zhang article entitled "Classification Trees for Multiple Binary Responses." Applicants respectfully traverse this rejection.

The Lazarus patent discloses a predictive modeling of consumer behavior by applying consumer transactional data to predictive models associated with

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merchant segments. The predictive model clusters merchant vectors representing specific merchants to form merchant segments which are trained using consumer transaction data in selected past time periods to predict spending in subsequent time periods. The Zhang article describes a classification tree methodology.

*Independent Claim 1*

Independent claim 1 is allowable for at least the reason that Lazarus and Zhang do not disclose, teach, or suggest "consumers in each cluster of said plurality of clusters have substantially similar behavioral and demographic characteristics to each other and different behavioral or demographic characteristics from consumers in all other clusters of said plurality of clusters."

In this regard, and with reference to the teaching of the Lazarus patent, the Office Action has cited col. 1, lines 35-47; col. 3, lines 1-6 and lines 55-57; col. 4, lines 12-42; col. 5, lines 28-31, col. 9, line 55 through col. 10, line 12; and col. 12, lines 57-62 as follows:

... The ultimate goal of this type of approach, whether acknowledged or not, is to predict consumer spending in the future. The assumption is that consumers will spend money on their interests, as expressed by things like their subscription lists and their demographics. Yet, the data on which the determination of interests is made is typically only indirectly related to the actual spending patterns of the consumer. For example, most publications have developed demographic models of their readership, and offer their subscription lists for sale to others interested in the particular demographics of the publication's readers. But subscription to a particular publication is a relatively poor indicator of what the consumer's spending patterns will be in the future.  
(col. 1, lines 35-47)

... system and method of analyzing and predicting consumer financial behavior that uses historical, and time-sensitive, spending patterns of individual consumers to create both meaningful *groupings (segments)* of

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**merchants** which accurately reflect underlying consumer interests, and a predictive model of consumer spending patterns for each of the **merchant segment**. ...  
(col. 3, lines 1-6)

Preferably, each consumer is also given a profile that includes various demographic data, and summary data on spending habits. ...  
(col. 3, lines 55-57)

Given the **merchant segments**, the present invention then creates a predictive model of future spending in each **merchant segment**, based on transaction statistics of historical spending in the **merchant segment** by those consumers who have purchased from merchants in the segments, in other segments, and data on overall purchases. In one embodiment, each predictive model predicts spending in a **merchant cluster** in a predicted time interval, such as 3 months, based on historical spending in the cluster in a prior time interval, such as the previous 6 months. During model training, the historical transactions in the merchant cluster for consumers who spent in the cluster, is summarized in each consumer's profile in summary statistics, and input into the predictive model along with actual spending in a predicted time interval. Validation of the predicted spending with actual spending is used to confirm model performance. The predictive models may be a neural networks, or other multivariate statistical model.

This modeling approach is advantageous for two reasons. First, the predictive models are specific to **merchant clusters** that actually appear in the underlying spending data, instead of for arbitrary classifications of merchants such as SIC classes. Second, because the consumer spending data of those consumers who actually purchased at the merchants in the **merchant clusters** is used, they most accurately reflect how these consumer have spent and will spend at these merchants.

To predict financial behavior, the consumer profile of a consumer, using preferably the same type of summary statistics for a recent, past time period, is input into the predictive models for the different **merchant clusters**. ...  
(col. 4, lines 11-42)

... The underlying intuition here is that merchants whom the consumers' behaviors indicates as being related will occur together often, whereas unrelated merchants do not occur together often. ...  
(col. 5, lines 28-31)

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Major categories 202 describe how the customers in a **merchant segment** typically use their accounts. Uses include retail purchases, direct marketing purchases, and where this type cannot be determined, then other major categories; such as travel uses, educational uses, services, and the like. Minor categories 204 describe both a subtype of the major category (e.g. subscriptions being a subtype of direct marketing) or the products or services purchased in the transactions (e.g. housewares, sporting goods, furniture) commonly purchased in the segment. Demographics information 206 uses account data from the consumers who frequent this segment to describe the most frequent or average demographic features, such as age range or gender, of the consumers. Geographic information 208 uses the account data to describe the most common geographic location of transactions in the segment. In each portion of the segment description 210 one or more descriptors may be used (i.e. multiple major, minor, demographic, or geographic descriptors). This naming convention is much more powerful and fine-grained than conventional SIC classifications, and provides insights into not just the industries of different merchants (as in SIC) but more importantly, into the geographic, approximate age or gender, and lifestyle choices of consumers in each segment.  
(col. 9, line 55 through col. 10. line 12)

... The customer or the financial institution may supply the additional demographic fields which are deemed to be of informational or of predictive value. Examples of demographic fields include age, gender and income; other demographic fields may be provided, as desired by the financial institution.  
(col. 12, lines 57-62)

**(emphasis added)**

As can be verified from a review of these cited portions of Lazarus, there is no teaching or disclosure of "consumers in each cluster of said plurality of clusters have substantially similar behavioral and demographic characteristics to each other and different behavioral or demographic characteristics from consumers in all other clusters of said plurality of clusters." As stated repeatedly above, Lazarus merely discloses merchant clusters or merchant segments. In fact at col. 4, line 30, Lazarus teaches away from consumer clusters by stating "the predictive models are specific to merchant

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clusters." Regarding the use of consumer information, Lazarus discloses at col. 3, lines 1-6 a "system and method of analyzing and predicting consumer financial behavior that uses historical, and time-sensitive, spending patterns of individual consumers to create both meaningful groupings (segments) of merchants ... and a predictive model of consumer spending patterns for each of the merchant segment." Furthermore, Lazarus discloses at col. 4, lines 38-41 "the consumer profile of a consumer ... is input into the predictive models for the different merchant clusters." The consumer profiles are not arranged into consumer clusters having similar characteristics, but are used to create merchant clusters of related merchants according to the consumers' spending habits. Therefore, Lazarus does not disclose "consumers in each cluster of said plurality of clusters have substantially similar behavioral and demographic characteristics to each other and different behavioral or demographic characteristics from consumers in all other clusters of said plurality of clusters."

The Zhang article relates to classification trees used for "many applications for which an array of health related symptoms are of primary interest." See the introductory paragraph of page 1 of the Zhang article. Thus, the Zhang article does not relate to demographic and behavior data, and is clearly drawn from non-analogous art. Also, there is no motivation to combine the teachings of Lazarus regarding clusters of merchants, with the tree structure disclosed in the Zhang article regarding health related issue. To state that the prior art would be provided with "the enhanced capability of increasing the accuracy of prediction" by utilizing the teachings of the Zhang art is not a proper combination of the references, because it is a statement made with the benefit of hindsight after reviewing the above-identified application. There must be some motivation found in the art which would lead to such a combination. But, none is found in the prior art.

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Accordingly, the rejection is deficient in this area. Notwithstanding, the undersigned has reviewed the entirety of the Lazarus patent and Zhang article and has failed to identify any such teaching anywhere within this reference. Accordingly, the Lazarus patent and Zhang article fail to teach or disclose the invention as defined by claim 1, and the rejection of claim 1 should be withdrawn.

*Independent Claim 4*

Independent claim 4 is allowable for at least the reason that Lazarus does not disclose, teach, or suggest "consumers in each cluster of said plurality of clusters have substantially similar behavioral and demographic characteristics to each other and different behavioral or demographic characteristics from consumers in all other clusters of said plurality of clusters" as described above regarding claim 1. Accordingly, the Lazarus patent and Zhang article fail to teach or disclose the invention as defined by claim 4, and the rejection of claim 4 should be withdrawn.

*Independent Claim 7*

Independent claim 7 is allowable for at least the reason that Lazarus does not disclose, teach, or suggest "a plurality of consumer clusters with consumers in each cluster of said plurality of clusters having a substantial similar behavioral and demographic characteristics to each other and different behavioral and demographic characteristics from consumers in all other clusters of said plurality of consumers" as described above regarding claim 1. Accordingly, the Lazarus patent and Zhang article fail to teach or disclose the invention as defined by claim 7, and the rejection of claim 7 should be withdrawn.

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### *Dependent Claims*

Dependent claims 2 and 3, 5 and 6, and 8-13 are believed to be allowable for at least the reason that these claims depend from allowable independent claims 1, 4, and 7, respectively. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

### **CONCLUSION**

The other cited art of record has been reviewed, and it is believed that the claims, as amended, patentably distinguish thereover.

In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully submits that all objections and rejections have been traversed, rendered moot, and/or accommodated, and that now pending claims 1-13 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned at 619-231-3666.

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Respectfully submitted,

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